North Carolina Department of Transportation
Transportation Program Management Unit - Value Management
Innovative Technologies and Products Awareness Report
June 5, 2019

PRODUCT HIGHLIGHT – Recycled Foamed Glass Aggregate

Close-up image of FGA G15 – image from Aero Aggregates' website

FGA G15, produced by Aero Aggregates of North America out of Eddystone, Pennsylvania, is an ultra-lightweight foamed glass aggregate made from 100 percent post-consumer recycled glass. This aggregate is approximately 85 percent lighter than most aggregates obtained from rock quarries. It can be used for projects requiring a lightweight backfill, embankments, or stabilization on top of softer soils. Another feature of foamed glass aggregate is insulation from the glass, which can be beneficial for underground utility pipes and tunnels in colder climates.

FGA G15 placed over underground utilities – image from Aero Aggregates' website

FGA G15 foamed glass aggregate is currently being evaluated by the Department and is listed on the Approved Products List under NP19-8452 with an Approved for Provisional Use status.

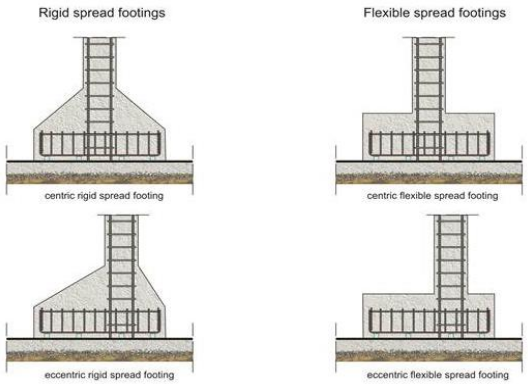
For more information, please visit: https://aeroaggregates.com.

PRODUCT INNOVATION – Spread Footing Foundations for MSE Walls

Example of MSE Wall at a bridge approach – image from Google image search

A Mechanically Stabilized Earth (MSE) wall is a type of retaining wall structure comprised of backfill material and soil reinforcement behind a typical precast concrete wall. MSE walls are useful in locations containing large grade separations without room for a typical slope. Bridge approaches are a common location where these can be found. If the bridge superstructure is placed on piles, the bridge approaches can settle more than the superstructure, causing a disjunction between the approach and the bridge deck. Maintenance is then needed, using a filler material such as grout or polyurethane foam, to raise the bridge approach to evenly match the bridge deck.

To reduce maintenance costs at bridge approaches, the Geotechnical Engineering Unit is evaluating the effects of supporting the bridge superstructure on spread footings (as shown in the image to the right) instead of piles, where bridge approaches are supported on MSE walls. The bridge superstructure is then expected to settle at the same rate as the bridge approach. This was recently done for the first time by the Department on project U-2525C in Guilford County. A total of fourteen footings at five locations were installed along I-840. Other states, such as Washington and Virginia, have noticed long-term improvements using spread footing foundations on MSE walls.



Examples of spread footing foundations – image from Google image search